Application Number 10/559881
Response to Office Action dated 09/25/2007

REMARKS

Applicant respectfully request favorable reconsideration and reexamination of this application.

Claim 10 is new and supported by for example, Fig. 1 and page 5, lines 19 - 29 in the Specification.

There is no new matter.

Claims 1-10 are pending.

Title of the Invention

The title of the invention was considered not descriptive. Applicant agrees with the Examiner's suggestion and respectfully requests that the title of the invention be changed to "ULTRASONIC PROBE WITH ACOUSTIC MEDIUM."

Claim Rejections - 35 USC § 103

Claims 1-9 were rejected under 35 USC 103(a) as being unpatentable over Hakimuddin (US 6612156 B1) and further in view of Nunomura et al. (US 7001355 B2). Applicant respectfully traverses this rejection.

There is no motivation to combine the teachings of Nunomura et al. with the teachings of Hakimuddin for at least the following reasons. Nunomura et al. teaches a water soluble humectant containing a butylene glycol for providing a moisturizing effect to skin without significantly deteriorating the penetration of skin lightening agents (column 11, lines 34-36). The humectant is applied on the skin (column 4, line 57). Hakimuddin teaches an acoustic measurement system for detecting solids within a fluid sample and mixing of fluid sample (abstract). Hakimuddin's device is not intended for use on skin. Accordingly, Hakimuddin's device does not benefit from including a skin moisturizing agent. Further, addition of a skin moisturizing agent to Hakimuddin's device would prevent the device from working as intended, because the measurement of the fluid sample would be affected by the added moisturizing agent mixed with the fluid. Even further, the fluid sample cell of the Hakimuddin system is enclosed and incapable of touching skin when working as intended. Accordingly, a humectant in the fluid sample cell would not moisturize skin. Thus, there is no reason to add a humectant taught by

Nunomura et al. to the fluid sample cell of Hakumuddin. Therefore, there is no motivation to combine the two references.

Regarding claim 1, the rejection states that Nunomura et al. teaches using a 1,3-butylene glycol as an acoustic medium and it would be obvious to one of ordinary skill in the art to replace 1,3-butylene glycol with 1,2-butylene glycol. Applicant respectfully disagrees.

It is shown throughout the Specification that 1,2-butylene glycol has unexpected and superior acoustic characteristics when compared to 1,3-butylene glycol. Examples of the unexpected and superior results are stated in pages 8-13 of the Specification. For example, in acoustic impedance tests, the acoustic impedance of 1,2-butylene glycol was found to be 1.47 MRayl at a temperature of 25 °C and 1.45 MRayl at a temperature of 20 °C (page 8, lines 1-17 in the Specification). In contrast, the acoustic impedance of 1,3-butylene glycol is about 1.54 MRayl (see page 8, lines 19-23 in the Specification). The acoustic impedance of 1,2-butylene glycol is superior to and more desirable than 1,3-butylene glycol because the acoustic impedance of 1,2-butylene glycol is similar to the acoustic impedance of a living body (see page 8, lines 17-18 in the Specification). Because of this and other unexpected and superior acoustic characteristics of 1,2-butylene glycol, "an ultrasonic probe with high performance, high quality, and safety can be obtained. In particular, since 1,2-butylene glycol produces a small amount of ultrasonic attenuation, it is possible to improve the transmitting/receiving sensitivity for ultrasonic waves" (page 10, lines 12-15; also see Fig. 2). Further, Fig. 3 illustrates clearly the superior viscosity characteristics of 1,2-butylene glycol over that of 1,3-butylene glycol for use as an acoustic medium. Neither Nunomura et al. nor Hakumuddin recognized these examples of superior acoustic properties 1,2-butylene glycol over that of 1,3-butylene glycol. Accordingly, it is not obvious that one of ordinary skill in the art would replace 1,3-butylene glycol with 1,2-butylene glycol. Therefore, claim 1 is allowable over Hakimuddin in view of Nunomura et al. Claims 2-9 are also allowable for at leas the same reasons as claim 1 from which they depend.

Regarding claims 2-6, the rejection states that it would have been obvious to one of ordinary skill in the art to combine the teachings of Hakimuddin and Nunomura in order to use a composition that can effectively deliver the ultrasound to the skin without leaving the skin feeling sticky. This is an erroneous motivation to combine the two references. If the composition is to be used on the skin, then the composition would on the outside of the outer

case, not the inside the outer case. The claims require that the acoustic medium to be in the outer case. Further, Hakimuddin's device is not intended to be used on skin. Accordingly, there is no reason for applying a composition on the outside of the Hakimuddin's device. Accordingly, it would not have been obvious to one of ordinary skill in the art to combine the teachings of Hakumuddin and Nunomura.

Claim 10 is patentable for at least the same reasons as claim 1 from which it depends. Further, Hakimuddin does not teach, at least, an outer case that includes an ultrasonic wave propagation window that serves as a propagation path of ultrasonic waves. Even further, Hakimuddin's device only detects materials contained within the sample measurement cell. Accordingly, there is no need for a window serving as a propagation path of ultrasonic waves in Hakimuddin's device. Even more, having such a window will prevent the Hakimuddin's device from working as intended. Nunomura et al. does not remedy the deficiencies of Hakumuddin. For at least the above reasons, claims 1-10 are allowable. Applicant respectfully requests a favorable reexamination and reconsideration.

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned attorney-of record, Douglas P. Mueller (Reg. No. 30,300), at (612) 455-3804.

Respectfully submitted,

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